An Assistive Eye-Drop Mold

Sylvia J. Wisher

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Post-eye-surgery patients or persons with glaucoma who also experience physical impairments are at high risk for complications when they are unable to instill prescribed eye drops safely and on schedule. For those patients who must be self-reliant for this important medication, a means of self-administering the drops is essential for successful medical management.

Persons at high risk are likely to fall into a pattern of noncompliance due to difficulty with accurate eye-drop instillation or fear of self-injury during administration attempts. Such persons may include those with hand tremors, severe arthritis, poor coordination, blindness, or peripheral neuropathy.

An adapted eyedropper mold that can be fabricated by the occupational therapist can help the patient to meet the goals of compliance and safety. The mold consists of a pair of empty eyeglass frames fitted with a holder, into which the eye-drop medication bottle fits snugly (see Figure 1). The mold positions the medication bottle to ensure that the drops are delivered accurately and without risk of injury to the eye.

Materials and Fabrication

The materials needed to make the assistive device are eyeglass frames from which the lenses have been removed (frames can be secured through a donation from the local Lions club or eye bank), low-temperature thermoplastic material, a rotary punch, and alcohol. The therapist should allow approximately 45 to 60 min for fabricating the mold and teaching the patient.

Figure 1. The assistive eye-drop mold.
A piece of low-temperature thermoplastic material, approximately 3 in. by 1 ¼ in., is softened and attached to the upper and lower frames of the eyeglasses on the right or left side, or both, as appropriate. This piece is molded so that the interior side is concave.

A hole is punched in the thermoplastic material at the correct level to target the patient’s eyeball. This can most accurately be assessed when the patient has his or her head extended (see Figure 2) or is supine with the head parallel to the floor, which is the position that he or she will use when actually instilling the drops. Using a finger or a blunt instrument, the therapist enlarges the hole and flares the edges to form a collar that will fit the neck of the eye-drop bottle snugly enough so that it is held securely as the person puts the eyeglass frames on his or her face. The mold should position the bottle far enough from the eye surface as to eliminate any risk of contact with the eyeball.

**Instructing the Patient in Use and Care**

The patient is instructed in the purpose, use, and care of the mold. Key points to be covered are as follows:

1. To control infection, wash hands prior to each eye-drop administration and clean the opening in the mold with alcohol prior to each use.
2. Insert the eye-drop bottle into the mold so it is snug, then apply the frames to the face.
3. Position the head properly and open the eyes wide.
4. Squeeze out the prescribed number of drops.
5. Gently blot around the eye with a tissue, if necessary. Do not rub or wipe across the eye.

Multiple medication bottles are usually easily distinguished by colored labels but can be marked for tactile discrimination for persons without functional vision.

**Conclusion**

After being introduced to the eye-drop assistive device and the role it can play in their patients’ medical management program, ophthalmologists and discharge planners are likely to include occupational therapy in their referrals for home care services.

Over a 5-year period, this simple assistive device has enabled many home care patients to remain independent and compliant with their eye medication regimen. Coupled with skilled nursing visits to assess and monitor wound healing, complications, and medications, successful medical management after eye surgery is greatly enhanced.